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DISEASE NOTES

First Report of Root Rot Caused by *Pythium sylvaticum* on Lettuce in Italy

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During a survey conducted in 2014 in northern Italy on leafy vegetables, lettuce (*Lactuca sativa* L.) cultivar Serena grown in the greenhouse on one farm in Bergamo province showed stunting and root rot. The first symptoms developed in spring, with air temperatures ranging from 18 to 24°C, on 15-day-old seedlings. Approximately 20 to 35% of plants on 0.5 ha were stunted with rotted roots and crowns. Within one day, affected plants collapsed. Tissue fragments from the symptomatic brown-colored roots of about 50 plants were washed in 1% NaOCl for 1 min, rinsed in sterile water, and plated on potato dextrose agar and BNPRA for oomycetes (Masago et al. 1977). After 3 days of incubation in the dark, 70 and 80% of root fragments were colonized by the same pathogen on each medium. Repeated isolations carried out from affected plants grown in the same area provided the same results. At least five morphologically similar isolates, grown for 6 days on corn meal agar, had aseptate hyphae. Oogonia were globose, mostly intercalary, and often surrounded by appressorium-like structures, measuring 15.8 to 33.0 µm (average 23.3 µm). Antheridia (1 to 3 per oogonium) were mostly diclinous, whereas oospores were globose, and were 13.3 to 27.6 µm (mean 21.9 µm) in diameter. These morphological characteristics identified the pathogen as *Pythium* sp. (Watanabe 2002). The internal transcribed spacer (ITS) region of rDNA of the isolate py4-13 was amplified using the ITS1/ITS4 primers (White et al. 1990) and sequenced. BLAST analysis (Altschul et al. 1997) of the 922 bp segment showed a 99% homology with the sequence of *Pythium sylvaticum* strain HF3 (GenBank accession no. KY084736). The nucleotide sequence has been assigned the GenBank accession number MF079259. Koch's postulates were performed using the isolate py4-13 inoculated onto lettuce cultivar Serena grown in 10-liter pots, containing a steam-disinfested organic peat substrate infested with wheat and hemp kernels colonized with the isolate at a rate of 2 g/liter. Forty seeds per pot were sown in four pots filled with the infested peat, and the same number of seeds was grown in noninfested substrate. Plants were kept in the greenhouse at temperatures ranging from 20 to 25°C. Symptoms similar to those previously described developed 7 days after sowing, and 14 to 16 days later, 30 and 40% of plants were dead in two repeated trials, respectively. Control plants remained healthy. *P. sylvaticum* was consistently reisolated from the symptomatic roots. To our knowledge, this is the first report of the presence of *P. sylvaticum* on lettuce in Italy. The same pathogen has been reported on lettuce in Arizona, Canada, and South Africa (Farr and

Rossman 2017). Lombardy is one of the most important leafy vegetable production areas in Italy, with approximately 2,000 ha of crops grown for the ready-to-eat market. A careful monitoring is needed because how this pathogen is spread in this region is unknown.

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